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SCIENCE AND ART DEPARTMENT  
OF THE COMMITTEE OF COUNCIL ON EDUCATION.

SOUTH KENSINGTON.

REPORT ON THE  
COLLEGE OF SCIENCE FOR IRELAND.

To the Right Honourable the Lords of the Committee  
of Her Majesty's Most Honourable Privy Council on  
Education.

My Lords,

In accordance with the request contained in the letter of the Lord President dated the 17th February 1866, and with your Lordships' Minute of the 10th March, We, the Commissioners thereby appointed, have carefully considered the subject of the new College of Science referred to us, and have now the honour to submit the following Report.

2. From the general Minute on Scientific Institutions and Instruction in Dublin—that of the 21st September 1865—it appears that your Lordships consider that, for the various reasons therein given, “the Museum of Irish Industry” now existing in Dublin “should,” on its re-organization as contemplated by the Minute, “have a wider scope given to it than that of a School of Mines; that it should become a College for affording a complete and thorough course of instruction in those branches of Science which are more immediately connected with and applied to all descriptions of industry, including Agriculture, Mining, and Manufactures; that it should in this way supplement the elementary scientific instruction already provided for by the Science Schools of the Department; and that it should assist in the training of teachers for these schools.”

19.7.66

3. At the same time the Minute of 10th March 1866 states that "as the sphere of action sketched out in this (the preceding) "Minute will be somewhat new and beyond the limits hitherto placed on the action of the Science and Art Department in respect of the encouragement of Science, My Lords have appointed a Commission to advise them on the subject;" and it proceeds "My Lords consider that it is desirable that the College should, on its establishment, commence with a clear and defined object, a well considered course of study, and a proper staff of professors. They therefore request the Commission to consider these subjects and report generally on the scope of the instruction to be given, the examinations for testing it, and the certificates, etc., to be awarded to successful students."

4. Her Majesty's Government having thus decided generally on the necessity for the enlargement of the sphere of action of the existing Government institution for scientific instruction in Dublin, it would appear that the matters on which Your Lordships desired that we should advise may be most conveniently taken under the following heads.

- I. The precise sphere of action of the College and the object at which it should aim.
- II. The scope and subjects of instruction.
- III. The staff of professors necessary.
- IV. The course of instruction and its duration.
- V. The examinations and granting of certificates.

*I.—The precise sphere of action of the College and the object at which it should aim.*

5. We think the object of the College should be to supply, as far as practicable, a complete course of instruction in Science applicable to the Industrial Arts, especially those which may be classed broadly under Mining, Agriculture, Engineering, and Manufactures, and



to aid in the instruction of teachers for the local Schools of Science.

6. We do not consider that the practical applications of Science to Industry, or the Arts themselves, should be undertaken by the New College of Science as a special part of its teaching. Its aim should rather be to impart a sound and thorough knowledge of those branches of Science which may be so applied, leaving it to the student subsequently to specialize his knowledge and turn his attention in the direction he may find most suitable: but practical subjects when capable of being rendered illustrative of scientific principles should in all cases be introduced in the course of instruction.

7. Under existing circumstances, however, due to the division and redistribution of duties between the Royal Dublin Society and the College of Science, and in consequence of the representation made by the Secretary, we think it may be advisable to attach a chair of Agricultural Science to the College. This should be looked upon as experimental and its continuance be understood to be dependent on its success.

## II.—*The scope and subjects of instruction.*

8. The subjects of instruction should be the following:—

1. Applied Mathematics.
2. Descriptive Geometry, & Mechanical Drawing.
3. Mechanism.
4. Physics.
5. Chemistry.
6. Botany.
7. Zoology.
8. Geology.
9. Mineralogy.
10. Agricultural Science.
11. Mining.
12. Metallurgy.
13. Machinery.
14. Surveying.

9. We propose that under Applied Mathematics should be taken the application of Mathematics to those Sciences which are generally included under the head of Mechanics, viz., Statics, Dynamics, Hydrostatics, and Hydrodynamics, as well as to some other branches of Physics.

10. Under Mechanism should be treated only the relations of motion, or the study of machines merely as contrivances for changing one kind of motion into another, apart from any considerations of force,—a science which has been termed Kinematics.

11. Under Machinery then would be treated the application of Mechanics and Mechanism to machines used in the industrial arts.

12. As probably many students will enter at first without a sufficient knowledge of pure Mathematics, the Professor of Applied Mathematics should give such preliminary instruction as may be necessary to students entering for the Associateship (see par. 18). He should not be called upon to give any such instruction to the occasional students, who can obtain it easily for themselves, and who should not be allowed to join the Applied Mathematics class without being thoroughly prepared in the elements of Pure Mathematics.

13. Chemistry should include both Lectures and Laboratory practice.

14. The requisite appliances and assistance for instructing the students practically in this and other branches of science should be provided.

### III.—*The staff of Professors.*

15. To teach the foregoing subjects Professors will be required in—

1. Applied Mathematics and Mechanism.
2. Physics.
3. General Chemistry.
4. Applied Chemistry.



5. Botany.
6. Zoology.
7. Geology.
8. Mineralogy and Mining.
9. Agriculture.
10. Descriptive Geometry, Mechanical Drawing, Machinery and Surveying.

Professorships of Physics, General Chemistry, Applied Chemistry, Botany, Zoology, Geology, and Agriculture already exist in connexion with the Science and Art Department. This proposal therefore contemplates the addition of three new Professorships.

16. It will be necessary for the Professor of Applied Mathematics and Mechanism, and the Professor of Descriptive Geometry, Machinery, and Surveying, to devote their whole time to the College; whilst from the other professors a minimum of three lectures a week during the session will be required. As the School develops, assistants or tutors to teach under the Professors may be needed in many of the subjects.

#### IV. *The Course of Instruction.*

17. The course of instruction should extend over three years. There should be two terms in each year. In the first two years the instruction should be general. In the last year it should be specialized under the heads of Agriculture, Mining, Engineering and Manufactures. The following is the scheme proposed.

##### FIRST YEAR.

###### 1st term.

Applied Mathematics.  
Physics.  
Descriptive Geometry.

###### 2nd term.

Applied Mathematics.  
Physics.  
Botany.  
Descriptive Geometry.

## SECOND YEAR.

Applied Mathematics.	Chemistry.
Chemistry.	Laboratory practice.
Laboratory practice.	Zoology
Mechanical Drawing.	Mechanical Drawing.

## THIRD YEAR.

## Division A. Mining.

Geology with demonstrations in Palæontology, Mineralogy, Mining and Assaying.

## Division B. Agriculture:

Geology, Agricultural Science, and Land Surveying.

## Division C. Engineering.

Mechanism, Machinery, Mechanical Drawing, and Surveying.

## Division D.

Mechanism, Applied Physics, and Applied Chemistry.

V. *Examinations and Certificates.*

18. A diploma of Associateship of the College should be given to students who pass in all the subjects of the first two years and take a first class in all the subjects in one division of the 3rd year.

19. Persons should also be permitted to enter for the separate courses and to receive certificates after examination.

20. The examinations should be conducted by officers appointed by the Science and Art Department conjointly with the Professors of the College.

21. In conclusion we would beg leave strongly to urge that it is important and advisable to have instruction given in Political Economy. Probably the best way of promoting a knowledge of this important Science would be



to establish evening lectures to be attended by the students but open to all other persons. Any objection that might be taken to a government department dealing with this subject might, we would suggest, be met by requesting one or other of the Universities to appoint the lecturer for the time being.

We have the honour to be,

My Lords,

Your Lordships' obedient Servants,

(Signed) ROSSE.

TALBOT DE MALAHIDE.

W. B. CARPENTER.

B. M. COWIE.

JOHN FOWLER.

E. FRANKLAND.

W. H. GREGORY (with the exception of paragraph 21 to which I object).

H. D. HARNESS, COL. R.E.

A. W. HOFMANN.

THOMAS H. HUXLEY.

J. BEETE JUKES.

ROBERT KANE.

MYLES O'REILLY (with the exception of paragraph 21 to which I object).

LYON PLAYFAIR.

E. SABINE, LIEUT.-GENERAL, R.A.

WARRINGTON W. SMYTH.

WILLIAM K. SULLIVAN.\*

JOHN TYNDALL.

J. F. D. DONNELLY, CAPT. R.E. AND  
SECRETARY OF COMMISSION.

South Kensington, 9th July 1866.

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\*Professor Sullivan signs with the following reservation, "with the exception of paragraph 13 which does not express the decision of the Commission; the first part of paragraph 16 so far as relates to the words 'devote their whole time;' and the last sentence of paragraph 21 to which I strongly object."

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J. F. D. DONNELLY, Capt. R.E. and  
 SECRETARY OF COMMISSION.

South Kensington, 24 July 1866.

"Professor Sullivan signs with the following reservation: 'with the exception  
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 first part of paragraph 22 so far as relates to the words 'devote their whole  
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